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UTAH DIVISION OF
SOLID & HAZARDOUS WASTE

**BEAVER COUNTY LANDFILL
2007 PERMIT RENEWAL**

Prepared for:

**BEAVER COUNTY
Special Service District #5
7300 South 800 East
Milford, Utah 84751
Tel: (435) 386-2530
Email: bcwaste@infowest.com**

February 23, 2007

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UTAH DIVISION OF
SOLID & HAZARDOUS WASTE

**APPLICATION TO RENEW A PERMIT TO
OPERATE A CLASS I LANDFILL**

Beaver County Landfill

February 23, 2007

PART I – GENERAL INFORMATION



Beaver County
Special Service District #5
7300 South 800 East
Milford, Utah 84751
Tel: (435) 386-2530
E-mail: bcwaste@infowest.com

ANNOTATED TABLE OF CONTENTS

Part

Title

Introduction

Includes summary of permit with technical and operational issues highlighted

I.

General Information

Includes State of Utah Solid Waste Permit Application forms

II.

General Report

Includes information required by Utah Administrative Rule R315-301 through R315-320

III.

Technical and Engineering Report

Includes information required by Utah Administrative Rule R315-301 through R315-320

INTRODUCTION

This document presents an application to renew a permit to operate solid waste disposal facilities at the Beaver County Landfill (BCL), which is owned and operated by Beaver County Special Service District #5. The BCL is currently operated under permit number 9430 issued by the Utah Solid and Hazardous Waste Control Board. This permit became effective on February 1, 2001 and expires at midnight on January 31, 2006.

This permit application contains conceptual level engineering sufficient for permitting purposes only. Detailed engineering documents (construction drawings, specifications, and QA/QC plan) for each of the specific construction tasks will be finalized and submitted to the Division of Solid and Hazardous Waste (DSHW) for approval prior to actual construction. This permit application does not represent a lateral expansion to the currently permitted landfill cells. It does, however; contain a few changes in the Operations Plan to reflect current operational practices.

This application has been organized to follow the general outline of R315-302 and R315-320. This organization results in some duplication and repetition of information, but it is intended to simplify the review and approval of the permit renewal application. Part I of this document duplicates the standard form outlining general data pertaining to the site. Part II is a general report that includes a facility description, Landfill Operations Plan, and Closure and Post-Closure care plans. Part III is the Technical & Engineering Report and includes details on the design and geohydrology of the site.

The details from previously accepted waivers on ground water monitoring (liner exemption) are not discussed in detail; but original documents are included as an Appendix. Due to the small amount of waste received and the lack of significant operational changes by the Beaver County Landfill; the original drawing package developed by Vector Engineering will be included as Appendix A.

Part I - General Information APPLICANT: PLEASE COMPLETE ALL SECTIONS.

Landfill e	<input checked="" type="checkbox"/> Class I	II. Application Type	<input type="checkbox"/> New Application	<input type="checkbox"/> Facility Expansion
	<input type="checkbox"/> Class V		<input checked="" type="checkbox"/> Renewal Application	<input type="checkbox"/> Modification

For Renewal Applications, Facility Expansion Applications and Modifications Enter Current Permit Number 9430**III. Facility Name and Location**

Legal Name of Facility Beaver County Landfill			
Site Address (street or directions to site) 3 miles northwest of Beaver			County Beaver
City Beaver	State UT	Zip Code 84713	Telephone (435) 438-5744
Township 29 S	Range 7 W	Section(s) 8	Quarter/Quarter Section Quarter Section
Main Gate Latitude degrees 38 minutes 17 seconds 60	Longitude degrees 112 minutes 42 seconds 0		

IV. Facility Owner(s) Information

Legal Name of Facility Owner Beaver County Special Service Dist. #5			
Address (mailing) 7300 South 800 East PO Box 278			
City Milford	State UT	Zip Code 84751	Telephone (435) 386-2530

V. Facility Operator(s) Information

Legal Name of Facility Operator Beaver County Special Service Dist. #5			
Address (mailing) 7300 South 800 East PO Box 278			
City Milford	State UT	Zip Code 84751	Telephone (435) 386-2530

VI. Property Owner(s) Information

Legal Name of Property Owner Beaver County Special Service District #5			
Address (mailing) 7300 South 800 East PO Box 278			
City Milford	State UT	Zip Code 84751	Telephone (435) 386-2530

VII. Contact Information

Owner Contact Mr. David Vetsch		Title Manager	
Address (mailing) 7300 South 800 East PO Box 278			
City Milford	State UT	Zip Code 84751	Telephone (435) 438-5744
Email Address bcwaste@infowest.com		Alternative Telephone (cell or other)	(435) 386-2530
Operator Contact Mr. David Vetsch		Title Manager	
Address (mailing) 7300 South 800 East PO Box 278			
City Milford	State UT	Zip Code 84751	Telephone (435) 438-5744
Email Address bcwaste@infowest.com		Alternative Telephone (cell or other)	(435) 386-2530
Property Owner Contact Mr. David Vetsch		Title Manager	
Address (mailing) 7300 South 800 East PO Box 278			
City Milford	State UT	Zip Code 84751	Telephone (435) 438-5744
Email Address bcwaste@infowest.com		Alternative Telephone (cell or other)	(435) 386-2530

Part I General Information (Continued)

Waste Types (check all that apply)			IX. Facility Area	
<input checked="" type="checkbox"/> Municipal Waste	<input checked="" type="checkbox"/> Combined Disposal Unit	<input type="checkbox"/> Monofill Unit	Facility Area.....	<u>67</u> acres
<input checked="" type="checkbox"/> Construction & Demolition	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Disposal Area.....	<u>20</u> acres
<input checked="" type="checkbox"/> Industrial	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Design Capacity	
<input type="checkbox"/> Incinerator Ash	<input type="checkbox"/>	<input type="checkbox"/>	Years.....	<u>20</u>
<input checked="" type="checkbox"/> Animals	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Cubic Yards.....	<u>465276</u>
<input checked="" type="checkbox"/> Asbestos	<input type="checkbox"/>	<input type="checkbox"/>	Tons.....	<u>267127</u>
<input type="checkbox"/> PCB's (R315-315-7(3) only)	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/> Other _____	<input type="checkbox"/>	<input type="checkbox"/>		

X. Fee and Application Documents

Indicate Documents Attached To This Application		<input type="checkbox"/> Application Fee: Amount \$	Class V Special Requirements
<input checked="" type="checkbox"/> Facility Map or Maps	<input checked="" type="checkbox"/> Facility Legal Description	<input checked="" type="checkbox"/> Plan of Operation	<input checked="" type="checkbox"/> Waste Description
<input type="checkbox"/> Ground Water Report	<input checked="" type="checkbox"/> Closure Design	<input checked="" type="checkbox"/> Cost Estimates	<input checked="" type="checkbox"/> Financial Assurance
			<input type="checkbox"/> Documents required by UCA 19-6-108(9) and (10)

I HEREBY CERTIFY THAT THIS INFORMATION AND ALL ATTACHED PAGES ARE CORRECT AND COMPLETE.

Signature of Authorized Owner Representative	Title	Date
	Address	
Name typed or printed		
Signature of Authorized Land Owner Representative (if applicable)	Title	Date
	Address	
Name typed or printed		
Signature of Authorized Operator Representative (if applicable)	Title	Date
	Address	
Name typed or printed		

**REPERMIT APPLICATION TO
OPERATE A CLASS I LANDFILL**

Beaver County Landfill

PART II - GENERAL REPORT

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1.0 - FACILITY DESCRIPTION

The Beaver County Class I Landfill is located approximately three miles northwest of the City of Beaver in Beaver County, Utah, and serves a population of approximately 6,100 city and county residents. The landfill is owned and operated by the Beaver County Special Service District #5 (District).

Access to the Beaver County Landfill (BCL) property is via a two-lane overpass from the frontage road east of I-15 near the northern Beaver interchange. A paved road leads to the landfill property where site access turns to a well-maintained gravel road. As vehicles enter the landfill property; a Landfill Attendant in the shop/office building or near the disposal areas screens the loads and directs the driver to the appropriate working face. A new scale has been installed at the landfill for the option to weight vehicles as the need arises.

The facility is entirely fenced, with public access through the locking gate at the main entrance of the solid waste facility. The location of the landfill site with respect to Beaver is as indicated on the location map included on Drawing 1 (Appendix A).

1.1 AREA SERVED

The BCL serves all of Beaver County with the exception of the C&D wastes disposed at the Milford Class IVb landfill. The annual tonnage for the wastes accepted at the facility during 2004 was approximately 7,200 tons. The 7,200 tons per year of waste averages out to a daily operational tonnage of approximately 23 tons (based upon 310 operating days during the year). Based upon the 2004 tons; the average growth rate of the waste stream has been closer to 4.4% rather than the originally anticipated 2.38%.

1.2 WASTE TYPES

The BCL accepts the following waste types for disposal or recycling:

- Yard Waste – brush, branches, clippings, leaves and grass.
- Construction Wastes – waste generated from construction and includes building materials used in construction. Construction related materials include packaging materials from products, waste lumber, wallboard, boxes from appliances, empty paint cans, empty caulking tubes, and empty sealer and adhesive cans. “EMPTY” means that no more than 10% of the product remains inside the container.
- Demolition Wastes – waste generated from the destruction or remodeling of buildings and houses. Demolition Wastes may include furnaces, pipes, ducting and water heaters.

Furniture and other materials that are not part of the building structure must be removed before demolition.

- Untreated wood, including pallets and crates
- Asphalt from roads and other surfaces
- Household Wastes
- Contaminated Soils
- Friable asbestos
- Tanks of any kind
- Railroad ties
- Cardboard not directly generated from construction or demolition activities
- Furniture of all kind
- Metal not directly generated from construction or demolition activities
- Electronics of all kind
- Treated lumber

BCL is currently separating white goods, scrap metal, and green waste in conjunction with the overall operation of the MSW and C&D disposal areas.

1.3 FACILITY HOURS

The operating hours for the facility are 9:00 a.m. to 5:00 p.m. year round. The facility is open Monday thru Saturday with the following holidays being observed:

- New Years Day
- Human Rights Day
- Presidents Day
- Memorial Day
- July 4th
- Pioneers Day
- Labor Day
- Columbus Day
- Veterans Day
- Thanksgiving Day
- Christmas Day

The following facility information is posted at the gate:

- Landfill Owner
- Days of Landfill Operation
- Hours of Landfill Operation
- Instructional Signs (no scavenging, no hazardous materials, dump in designated areas, etc.)
- Emergency Telephone Numbers

1.4 LANDFILL EQUIPMENT

The following equipment is on site and used in landfill operations:

- 816B Compactor
- 544G John Deere Loader
- 10-wheel dump truck
- D6 Caterpillar Dozer

Additional heavy equipment is available from Beaver County on an as-needed basis. Minor vehicle maintenance is performed on-site by landfill personnel. Major equipment repairs are performed off-site.

1.5 LANDFILL PERSONNEL

The following briefly presents the responsibilities for all on-site landfill personnel at the BCL:

Landfill Manager - The Manager is responsible for all matters relating to the solid waste program for Beaver County; including landfill operations and all recycling functions. The Landfill Manager is responsible that the landfill operations meet all Department of Solid and Hazardous Waste (DSHW) permit requirements. The Landfill Manager conducts regular facility inspections and monitors all landfill activities. The Landfill Manager is responsible for all operational documentation including the annual reports to DSHW. The Landfill Manager is responsible for all persons on the site including visitors.

Landfill Attendants – The Landfill Attendants are responsible for all day-to-day activities at the landfill. These responsibilities include, waste acceptance and placement, traffic control, visual inspection of incoming waste, random waste screening operations, and general construction as is pertains to landfill operations. The Landfill Attendants serve as both equipment operators and gatehouse attendants.

2.0 - LEGAL DESCRIPTION

The BCL is located approximately three miles northwest of Beaver, Utah, and approximately one mile west of U.S. Interstate 15, as illustrated on Drawing 1 and Drawing 2 (Appendix A). As described by the Public Land Survey System, the landfill currently occupies the NE $\frac{1}{4}$ NW $\frac{1}{4}$, SE $\frac{1}{4}$ NW $\frac{1}{4}$, NE $\frac{1}{4}$ NE $\frac{1}{4}$, Section 8, Township 29 South, Range 7 West, Salt Lake Baseline and Meridian (SLB&M). The longitude and latitude of the entrance gate of the landfill are approximately 112.70W and 38.30N.

Copies of the legal descriptions for the landfill parcels are included in Appendix B.

3.0 – OPERATIONS PLAN

The Operation Plan for the BCL has been written to address the requirements of Utah State Solid Waste Regulations R315-305 and describes the proposed operations of the BCL. This updated Operations Plan reflects current landfill operations; data contained in the January 1998 Permit Application, and anticipated changes in landfill operations.

The following section details the operational specifics of the BCL. Forms used in the documentation of the operation are included in Appendix C.

3.1 SCHEDULE OF CONSTRUCTION

The development of the BCL is incremental in nature. As Phase 1 is being filled; Phase 2 is being developed. As Phase 1 nears final elevation (and is being prepared for final cover), Phase 2 begins to accept waste and Phase 3 is excavated to provide cover soils. Phase 1 is currently being utilized for waste disposal; Phase 2 will become operational in approximately 2013 with Phase 3 beginning operations in approximately 2021.

3.2 DESCRIPTION OF WASTE HANDLING PROCEDURES

3.2.1 General

Since the commencement of operations of the BCL; several small operational modifications have been made at the facility. Slight modifications to the waste handling procedures were necessary to ensure proper separation of the C&D waste from the MSW waste. The waste control program is designed to efficiently manage the disposal of both MSW and C&D wastes while minimizing the potential of hazardous or unacceptable wastes being delivered to the BCL. The program is designed to protect the health and safety of employees, customers, and the general public, as well as to protect against the contamination of the environment.

The landfill site is open for public and private disposal. Signs have been posted along the access road to clearly indicate (1) the types of wastes that are accepted at each facility; (2) the types of wastes not accepted at the site; and (3) the penalty for illegal disposal.

All vehicles delivering wastes to the site are stopped at the equipment maintenance building and gatehouse (EMBG) or near the working face by a Landfill Attendant. The Landfill Attendant will

inquire as to the contents of each incoming load to direct the driver to the MSW disposal area, the C&D disposal area, metal recycling area, greenwaste area or to reject the load due to unacceptable materials. Any vehicle suspected of carrying unacceptable materials (liquid wastes, or hazardous wastes) will be prevented from entering the disposal areas unless the driver can provide evidence that the waste is acceptable for disposal at the site. BCL reserves the right to refuse service to any suspect load. Vehicles carrying unacceptable materials will be required to exit the site without discharging their loads.

If the Landfill Attendant suspects that any load contains unacceptable materials, the Landfill Attendant will further inspect the load at the tipping area before final disposal is allowed.

Loads will be regularly surveyed at each of the tipping areas. If a discharged load contains inappropriate or unacceptable material, the discharger will be required to reload the material and remove it from the landfill site. If the discharger is not immediately identified, the area where the unacceptable material was discharged will be cordoned off. Unacceptable material will be moved to a designated area for identification and preparation for proper disposal.

3.2.2 C&D Wastes

Due to site access; C&D wastes are dumped at the top of the working face and spread down the slope in one to two foot lifts.

Typically the compactor is operated with the blade facing downhill. Equipment operations across the slope are avoided to minimize the potential of equipment tipping over. In addition to safety concerns, a toe of slope to crest of slope working orientation provides the following benefits:

- Increases effective compaction.
- Increased visibility for waste placement and compaction.
- More uniform waste distribution.

The C&D wastes will be compacted by making three to five passes up and down the slope. Compaction reduces litter, differential settlement, and the quantities of cover soil needed. Compaction also extends the life of the site, reduces unit costs, and leaves fewer voids to help reduce vector problems. Care is taken that no holes are left in the compacted waste. Voids are filled with additional waste as they develop.

Cover soils will be applied to all areas of the active cell at a minimum of every 30 days.

3.2.3 MSW and Commercial Wastes

Household waste consists of any solid waste derived from households, including garbage, trash, and sanitary wastes. Household sources may include single and multi-family residences, hotels, motels, bunkhouses, ranger stations, campgrounds, picnic grounds, and recreation areas. Commercial wastes are those wastes which are non-industrial in nature and include solid waste generated by stores, offices, restaurants, warehouses, and other non-manufacturing activities, excluding residential and industrial wastes.

Residential collection is mandatory throughout Beaver County. Collection services are provided by a commercial hauler. In the outlying unincorporated areas of the county, dumpsters are provided at central locations. The majority of the management of the municipal waste stream consists of the disposal of household and commercial wastes.

Currently, waste delivered to the working face is dumped at the toe of the working face when possible and spread up the slope in one to two foot lifts, keeping the slope at a typical four to one (horizontal to vertical) configuration.

Work face dimensions will be kept narrow enough to minimize blowing litter and reduce the amount of soil needed for cover.

Typically the compactor is operated with the blade facing uphill. Equipment operations across the slope are avoided to minimize the potential of equipment tipping over. In addition to safety concerns, a toe of slope to crest of slope working orientation provides the following benefits:

- Increases effective compaction.
- Increased visibility for waste placement and compaction.
- More uniform waste distribution.

The wastes will be compacted by making three to five passes up and down the slope. Compaction reduces litter, differential settlement, and the quantities of cover soil needed. Compaction also extends the life of the site, reduces unit costs, and leaves fewer voids to help reduce vector problems. Care is taken that no holes are left in the compacted waste. Voids are filled with additional waste as they develop.

Cover soils will be applied to all areas of the active cell daily. Intermediate cover will be placed in active areas of the landfill that will not receive waste within 30 days. BCL utilized alternate

daily cover as part of the landfill cover management. The alternate daily cover consists of a 1.5 mil plastic.

3.2.4 Industrial Wastes

The BCL receives minor amounts of industrial waste from local companies including a dairy, a packaging company, and a cement company. These wastes constitute a very small percentage of the total waste received and are managed as part of the municipal waste stream.

3.2.5 Green Wastes

Green wastes include trees and brush trimmings, grass clippings, straw and hay, and green wastes from seasonal or special events. These wastes are segregated from the waste stream and are stockpiled on-site. The district burns the stockpile once per year after obtaining a permit from the State of Utah.

A burn permit for Utah's southwest fire district, which includes Beaver County, is required during the summer months of June 1 through October 31. During this period the burn permit is obtained by request to the Beaver County fire warden. The warden inspects the landfill site and evaluates the conditions for the controlled burn. Restriction pertaining to the burn would be mandated in the permit and may include provisions for having the necessary fire control equipment at the site during the burn, weather and wind condition stipulations, clearing index, the available fire break, available landfill personnel, and any other pertinent issues.

In the event Beaver County needs to perform the yard waste burn during the months of November through May, a burn permit is not formally required by the State. BCL personnel, however, will inform the district fire warden and the local fire agencies of their intentions. All safety mandates will be adhered to, including fire protection equipment, fire-break, adequate personnel, and other restriction deemed necessary by the fire warden and/or the local fire department.

The burn will be conducted by landfill personnel with oversight by the local fire department. Fire control will be performed by use of the landfill dozer or County water truck. No fire will remain burning after dark and any smoldering embers will be extinguished by nightfall.

3.2.6 Special Wastes

3.2.6.1 Used Oil and Batteries

BCL does not accept used oil. BCL does accept batteries, which are stored on a pallet. Batteries which are discovered at the landfill are pulled from the waste stream and move to the storage pallet. When the pallet is full; the batteries are taken to local retailers for recycling.

3.2.6.2 Bulky Wastes

White goods are accepted at the BCL and are separated for recycling. All appliances potentially containing refrigerants are required to have the compressors removed before being accepted at the landfill. Used cars and other miscellaneous metal by-products are accepted and stored in the metal recycling area. The metal stockpile is removed once a year by a metal recycling service.

3.2.6.3 Tires

BCL accepts small quantities of tires from the general public. Commercial haulers are prohibited from disposing of tires. A total of four passenger tires are accepted from the public with each load. Tires accepted from the general public are incorporated into the working face as they are delivered to the landfill.

3.2.6.4 Dead Animals

Dead animals are accepted at the BCL. The dead animals are disposed of in a separate Monofill on the landfill property. All dead animals received are covered at the end of the working day with a minimum of six inches of soil.

3.2.6.5 Medical and Asbestos Waste

Medical and infectious wastes are accepted from medical facilities provided they are packaged in red plastic bags. If medical waste is received at the landfill, the Landfill Attendant will place the waste containers at the bottom of the active MSW face and immediately cover them with 12 inches of soil or waste material which does not contain infectious waste. The waste containers will not be compacted until they are covered.

Asbestos wastes will be accepted at the BCL provided the following conditions are satisfied:

- Asbestos waste must be adequately wetted to prevent fiber release

- Asbestos must be adequately containerized in double plastic bags of 6-mil or thicker and sealed in such a way to be leak-proof and air-tight with minimal air or voids space in the bags. If the asbestos is bound in a slurry, the slurry must be packaged in leak-proof and air tight rigid containers
- Waste containers must be labeled with the name of the waste generator, the location where the waste was generated, and tagged with a warning label that conforms to the requirements of 40 CFR Part 61.149(2)

If asbestos wastes are received at the landfill, the Landfill Attendant shall:

- Verify the quantities of waste received, sign off on the waste shipment record, and send a copy of the waste shipment record to the generator within 30 days
- Require vehicles that have transported asbestos waste to be marked with warning signs as specified in 40 CFR Part 61.149
- Inspect the load to verify that the asbestos waste is properly contained in leak-proof containers and labeled properly
- Place asbestos containers at the bottom of the active face with sufficient care to avoid breaking the containers
- Cover the waste within 18 hours with a minimum of six inches of material that does not contain asbestos, or if the waste is not properly containerized, cover immediately with six inches of material that does not contain asbestos; and
- Limit access to the asbestos disposal area until the waste has been covered with six inches of material which does not contain asbestos

If the Landfill Attendant believes the asbestos waste is in a condition that may cause significant fiber release during disposal, the Landfill Attendant will notify the Landfill Manager who will evaluate the waste. If the Landfill Manager suspects that disposal will result in significant fiber release during disposal; the Landfill Manager will notify the local health department and the Executive Secretary. If the wastes are not properly containerized, and the Landfill Attendant accepts the load, the Landfill Attendant shall thoroughly soak the asbestos material with a water spray prior to unloading, dispose of the waste near the bottom of the active face, and immediately cover the waste with six inches of non-asbestos material which prevents fiber release prior to compaction in the landfill. The Landfill Attendant will then thoroughly rinse out the haul truck.

The Landfill Attendants shall also provide adequate barriers in the vicinity of the asbestos disposal area to control public access. These controls will include not more than two sites of access to the asbestos management area. These access areas will be gated and locked when the area is unattended. Fencing will be placed around the perimeter of the disposal area and signs will be placed on the fence at intervals of no less than every 200 feet.

3.2.6.6 Grease Trap Waste and Car Wash Sediment

BCL accepts grease trap waste and sediment from car washes. The grease trap wastes are randomly tested for the following constituents:

▪ Benzene	less than	0.005 ppm
▪ Toluene	less than	1.0 ppm
▪ Ethylbenzene	less than	0.07 ppm
▪ Xylene	less than	10.0 ppm

Car wash sediments are randomly tested for the following TCLP metals:

▪ Arsenic	less than	5.0 ppm
▪ Barium	less than	100.0 ppm
▪ Cadmium	less than	1.0 ppm
▪ Chromium	less than	5.0 ppm
▪ Lead	less than	5.0 ppm
▪ Mercury	less than	0.2 ppm
▪ Selenium	less than	1.0 ppm
▪ Silver	less than	5.0 ppm

The grease trap and car wash sediments will be land applied within a level to eliminate free liquid. The level area will be confined within a 6" berm to prevent any liquid from running off. The grease trap and car wash sediments will be periodically removed to the working face once free liquid is completely removed. If the Landfill Attendant or the Landfill Manager has a reason to believe that a load of either grease trap or car wash sediment is unusual; then the load is tested for the above mentioned constituents.

3.2.6.7 Household Hazardous Wastes (Not Accepted)

BCL does not currently have a household hazardous waste collection program. The majority of household hazardous wastes are managed as part of the municipal waste stream.

3.3 WASTE INSPECTION

3.3.1 Landfill Spotting

Learning to identify and exclude prohibited and hazardous waste from the BCL is necessary for the environmentally safe operation of the facility. The Landfill Attendants are required to receive initial and periodic hazardous waste screening inspection training. Waste screening certificates of the training received are kept in the personnel files.

3.3.2 Random Waste Screening

Random inspections of incoming loads are conducted according to the schedule established by the Landfill Manager but no less frequently than one inspection for every one hundred incoming loads. If frequent violations are detected, additional random checks are scheduled at the discretion of the Landfill Manager.

The random waste screening process is as follows:

- The driver of the vehicle containing the suspect material is directed to the waste screening area.
- The Random Load Inspection Record (Appendix C) is completed.
- Protective gear is worn (leather gloves, steel-toed boots, and hard hat).
- The suspect material is spread out with landfill equipment or hand tools and visually examined. Suspicious marking or materials, like the ones listed below, are investigated further:
 - Containers labeled hazardous
 - Material with unusual amounts of moisture
 - Biomedical (red bag) waste
 - Unidentified powders, smoke, or vapors
 - Liquids, sludges, pastes, or slurries
 - Asbestos or asbestos contaminated materials
 - Batteries
 - Other wastes not accepted by the Landfill
- The Landfill Manager is called if unstable wastes that cannot be handled safely or radioactive wastes are discovered or suspected.

3.3.3 Removal of Hazardous or Prohibited Waste

Should hazardous or prohibited wastes be discovered during random waste screening or during tipping, the waste is removed from the landfill as follows:

- The waste is loaded back on the hauler's vehicle. The hauler is then informed of the proper disposal options
- If the hauler or generator is no longer on the premises and is known, they are asked to retrieve the waste and informed of the proper disposal options
- The Landfill Manager arranges to have the waste transported to the proper disposal site and then bill the original hauler or generator

A record of the removal of all hazardous or prohibited wastes will be kept in the site operational records.

3.3.4 Hazardous or Prohibited Waste Discovered After the Fact

If hazardous or prohibited wastes are discovered after the fact, the following procedure will be used to remove them:

- Access to the area is restricted
- The Landfill Manager is immediately notified
- The Landfill Attendant removes the waste from the working face if it is safe to do so.
- The waste is isolated in a secure area of the landfill and the area cordoned off
- Local authorities are notified as appropriate

The DSHW, the hauler (if known), and the generator (if known) will be notified within 24 hours of the discovery. The generator (if known) is responsible for the proper cleanup, transportation, and disposal of the waste.

3.3.5 Notification Procedures

The following agencies and people are contacted if any hazardous materials are discovered at the Landfill:

- David Vetsch, Landfill Manager..... (435) 438-5744
- Beaver County Health Department.....(435) 864.3612
- Executive Secretary, DSHW (801) 538-6170
- Beaver Co. Fire Department.....(435) 438.5221

A record of conversation is completed as each of the entities is contacted. The record of conversation is kept in the site operational records.

3.4 FACILITY MONITORING AND INSPECTION

3.4.1 Groundwater

The BCL is not required to monitor groundwater, therefore; no groundwater monitoring or inspection activities are performed.

3.4.2 Surface Water

Surface water is managed as outlined in the Stormwater Pollution Prevention Plan (SWPPP). The SWPPP is included as Appendix D.

Run-off from the final cover will be managed by a combination of berms and ditches. The berms will be placed to divert the water around the active area to ditches.

BCL staff will inspect the drainage system monthly. Temporary repairs will be made as required to any observed deficiencies until permanent repairs can be scheduled. BCL staff or a licensed general contractor will repair drainage facilities as required.

3.4.3 Leachate Collection

The BCL is not required to collect or monitor leachate, therefore; no leachate monitoring or inspection activities are performed.

3.4.4 Landfill Gas

Landfill gases are measured quarterly at the BCL with a hand held meter. The results are recorded on the Methane Observation Form included in Appendix C.

3.4.5 General Inspections

Routine inspections are necessary to prevent malfunctions and deterioration, operator errors, and discharges that may cause or lead to release of wastes to the environment or a threat to human health. Landfill Attendants are responsible for conducting and recording routine inspections of the landfill facilities according to the following schedule:

- Landfill Attendants (when operating equipment) perform pre-operational inspections of all equipment daily. A post-operational inspection is performed at the end of each shift while equipment is cooling down.
- All equipment is on a regular maintenance schedule. The on-site personnel perform all oil changes; an overall inspection of each piece of equipment is performed during oil changes. A logbook is maintained on each piece of equipment and any repairs and comments concerning the inspection are contained in the log. Oil samples are pulled when each machine is serviced and results are recorded in the machine log.
- Facility inspections are completed on a daily basis. Any needed corrective action items are recorded and the Landfill Attendants complete needed repairs. If a problem is of an urgent nature, the problem is corrected immediately.
- Scale maintenance will be performed as required, with calibration performed annually at a minimum. The scale is certified on an annual basis.

3.5 CONTINGENCY AND CORRECTIVE ACTION PLANS

The following sections outline procedures to be followed in case of fire, explosion, run-on/run-off contamination, or suspected groundwater contamination:

The Beaver County Fire Department is contacted in all cases where hazardous materials are suspected to be involved.

3.5.1 Fire

The potential for fire is a concern in any landfill. The BCL follows a waste handling procedure to minimize the potential for a landfill fire. If any load comes to the landfill on fire, the driver of the vehicle is directed to a pre-designated area away from the working face. The burning waste is unloaded, spread out, and immediately covered with sufficient amounts of soil to smother the fire. Once the burning waste cools and is deemed safe, the material will then be incorporated into the working face. Some loads coming to the landfill may be on fire but not detected until after being unloaded at the working face. If a load of waste that is on fire is unloaded at the working face, the load of waste is immediately removed from the working face, spread out, and covered with soil.

The Beaver County Fire department is called if it appears that landfill personnel and equipment cannot contain any fire at the landfill. The Beaver County Fire department is also called if a fire is burning below the landfill surface or is difficult to reach or isolate.

In case of fire, the Landfill Manager is notified immediately. A written report detailing the event is placed in the operating record within seven days, including any corrective action taken.

3.5.2 Explosion

If an explosion occurs or seems possible, all personnel and customers are accounted for and the Landfill is evacuated. Corrective action is immediately evaluated and implemented as soon as practicable.

The Landfill Manager is notified immediately and the Beaver County Fire department is called. The Executive Secretary is notified immediately.

3.5.3 Failure of Run-On/Run-Off Containment

The purpose of the run-on/run-off control systems is to manage the stormwater falling in or near the Landfill. Where possible, water is diverted away from the Landfill by utilizing ditches and berms. These ditches are inspected on a regular basis and repaired as needed. The working face will be sloped to direct the run-on away from the access road.

Any temporary berms or other structures are checked at least every 2 hours during the storm event until storm water flow has stopped. Permanent improvements or repairs are made as soon as practicable.

The Landfill Manager is notified immediately if a failure of the run-off system is discovered. The event is fully documented in the operating record, including corrective action within 14 days.

3.5.4 Groundwater Contamination

If ground water contamination is ever suspected, studies to evaluate the potential contamination will be conducted and the existence and/or extent of contamination will be documented. This program may include the installation of ground water monitoring wells. A ground water monitoring program would be developed and corrective action taken as deemed necessary, with the approval of the Executive Secretary.

3.6 CONTINGENCY PLAN FOR ALTERNATIVE WASTE HANDLING

The most probable reason for a disruption in the waste handling procedures at the BCL will be weather related. The Landfill may close during periods of inclement weather such as high winds, heavy rain, snow, flooding, or any other weather-related condition that would make travel or operations dangerous. The BCL may also close for other reasons like fire, natural disaster, etc. In general, the BCL staff minimizes the possibility of disruption of waste disposal services from an operational standpoint.

In case of equipment failure, replacement equipment will be rented or leased to continue operations while repairs are being made.

3.7 DISEASE AND VECTOR CONTROL

The vectors encountered at the BCL are flies, birds, mosquitoes, rodents, skunks, and snakes. Due to the rural location of the landfill, stray house pets are occasionally encountered at the landfill. The program for controlling these vectors is as follows:

3.7.1 Insects

Eliminating breeding areas is essential in the control of insects. BCL staff will minimize the potential breeding areas by daily covering the MSW waste with 6" of soil (or alternate daily cover) and covering the C&D waste with soil every 30 days. The landfill topography is sloped to reduce ponded water.

3.7.2 Rodents

Reducing potential food sources minimizes rodent populations at the landfill. Due to the nature of the C&D wastes, no significant numbers of mice or rats are anticipated at the C&D working face. The application of daily cover at the MSW working area will minimize the potential food sources and the potential for rodents.

In the unlikely event of a significant increase in the number of rodents at the BCL, a professional exterminator will be contacted. The exterminator would then establish an appropriate protocol for pest control in accordance with all county, state and federal regulations.

3.7.3 Birds

It is anticipated that the BCL will have minimal problems with birds. Good land filling practices of waste compaction, daily covering of working faces, and the minimization of ponded water will alleviate most of the bird problems. If the occasional need arises, the birds will be encouraged to leave by using cracker and whistler shells.

3.7.4 Household Pets

Because of the Landfill's location, some stray cats and dogs have wandered onto the property. When stray animals are encountered (and can be caught), they are turned over to the animal shelter. If the Landfill Attendants are unable to apprehend the animals, they are chased off the property.

3.7.5 Wildlife

The BCL has a variety of wildlife located on or near the landfill property. Wildlife includes deer, snakes, foxes, skunks, and coyotes. If problem skunks or snakes are encountered, they will be exterminated. If other site wildlife becomes a problem, the landfill will coordinate with the Division of Wildlife Resources to provide methods and means to eliminate the problem.

In the event that any of these vectors become an unmanageable problem, the services of a professional exterminator will be employed.

3.7.6 Fugitive Dust

The road leading to the BCL is paved, however; the access road to the disposal areas is an improved dirt/gravel road and will need occasional dust control measures. General landfill activities, site access by vehicles compounded by the occasional high wind may present a fugitive dust problem. If the dust problem elevates above the "minimum avoidable dust level", the landfill applies water to problem areas.

3.7.7 Litter Control

The relatively small volume of waste managed by the BCL facility helps to keep the amount of litter small. However; due to the nature of landfilling operations, blowing litter will still be an occasional problem. Landfill personnel perform routine litter cleanup to keep the landfill and surrounding properties clear of windblown debris.

Whenever possible, the working face is placed down wind so that blowing litter is worked into the landfill face. During windy conditions, landfill personnel minimize the spreading of the waste to reduce the amount of windblown debris. The prevailing wind on the site is from the southwest to the northeast.

3.8 RECYCLING

Currently, recycling activities are conducted in conjunction with the ongoing MSW and C&D operations. The vast majority of materials recycled are metals and green waste.

3.9 TRAINING PROGRAM

As part of the initial training of new employees, all new employees receive a site orientation. The site orientation details the locations of key facilities and the operations associated with each. Additionally, new employees are made aware of the contents of the Landfill's permit requirements.

All personnel associated with the operation of the landfill receive site specific training annually. The "Sanitary Landfill Operator Training Course" offered by the Solid Waste Association of North America (SWANA) is required by all employees. SWANA waste screening is also required of all Landfill Attendants. Certificates of completion are kept in personnel files.

Regular safety and equipment maintenance training sessions are held to ensure that employees are aware of the latest technologies and that good safety practices are used at all times.

3.10 RECORDKEEPING

An operating record is maintained as part of a permanent record on the following items:

- Vehicle weights, number of vehicles entering the landfill and types of wastes received on a monthly basis. Daily logs are stored on the computer.
- Deviations from the approved Operations Plan.
- Personnel training and notification procedures.
- Random load inspection log.

3.11 SUBMITTAL OF ANNUAL REPORT

BCL staff will submit a copy of its annual report to the Executive Secretary by March 1 of each year for the most recent calendar or fiscal year of facility operation. The annual report will include facility activities during the previous year and will include, at a minimum, the following:

- Name and address of facility.
- Calendar or fiscal year covered by the annual report.
- Annual quantity, in tons or volume, in cubic yards, and estimated in-place density in pounds per cubic yard of solid waste.
- Annual update of required financial assurances mechanism pursuant to Utah Administrative Code R315-309.
- Training programs completed.

3.12 INSPECTIONS

The Landfill Manager will inspect the facility to minimize malfunctions and deterioration, operator errors, and discharges that may cause or lead to the release of wastes to the environment or to a threat to human health. These inspections are conducted on a quarterly basis, at a minimum. The BCL Manager typically inspects the facility daily. A Landfill Inspection Form (Appendix C) is kept as part of the operating record. This log includes at least the date and time of inspection, the printed name and handwritten signature of the inspector, a notation of observations made, and the date and nature of any repairs or corrective actions. Inspection records are available to the Executive Secretary or an authorized representative upon request.

3.13 RECORDING WITH COUNTY RECORDER

Plats and other data, as required by the County Recorder, will be recorded with the Beaver County Recorder as part of the record of title no later than 60 days after certification of closure.

3.14 STATE AND LOCAL REQUIREMENTS

The BCL will maintain compliance with all applicable state and local requirements including zoning, fire protection, water pollution prevention, air pollution prevention, and nuisance control.

3.15 SAFETY

Landfill personnel are required to participate in an ongoing safety program. This program complies with the Occupational Safety and Health Administration (OSHA), and the National Institute of Occupational Safety and Health (NIOSH) regulations as applicable. This program is designed to make the site and equipment as secure as possible and to educate landfill personnel about safe work practices.

3.16 EMERGENCY PROCEDURES

In the event of an accident or any other emergency situation, the Landfill Attendant immediately contacts the Landfill Manager and proceeds as directed. If the Landfill Manager is not available, the Landfill Attendant calls the appropriate emergency number posted by the telephone. The emergency telephone numbers are:

- Beaver County Central Dispatch911
- Beaver County Fire Department(435) 438.5221
- Beaver County Sheriff's Office(435) 438.2466
- Beaver Valley Hospital(435) 438.7100
- David Vetsch, Landfill Manager(435) 438-5744

**APPLICATION TO RENEW A PERMIT TO
OPERATE A CLASS I LANDFILL**

Beaver County Landfill

PART III - TECHNICAL REPORT

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SECTION 1 - GEOHYDROLOGICAL ASSESSMENT

1.1 GEOLOGY AND HYDROLOGY

The geology, site soils, hydrology, leachate production and aquifer analysis of the BCL has been analyzed and reported in the "Application for a Waiver from Ground Water Monitoring Requirements at the Beaver Landfill, Beaver County, Utah" by Vector Engineering, Inc. November, 1994. The Application for a Waiver from Ground Water Monitoring Requirements at the Beaver Landfill Beaver County, Utah will be referred to as the "Waiver Application". Additional information generated to support the data and analysis presented in the Waiver Application entitled "Addendum to the Application for a Waiver from Ground Water Monitoring Requirements at the Beaver Landfill, Beaver County, Utah" (Vector Engineering, Inc., March 1995) will be referred to as the "Waiver Addendum".

The Waiver Application is included as Appendix E; while the Waiver Addendum is included as Appendix F. These documents (Vector, 1994, 1995) address the following elements of a geohydrological assessment:

- faults, local and regional geology and hydrology;
- evaluation of soil types and properties, including permeability rates;
- depths to ground water or aquifers;
- direction of ground water flow; and,
- calculation of site water balance using HELP model.

The remaining requirements of the geohydrological assessment, addressed below, include the following:

- quantity, location, and construction of any private and public wells on the site and within a 2,000 foot radius of the site;
- tabulation of all water rights for ground and surface water on the site and within a 2,000 foot radius of the site;
- identification and description of all surface waters on the site and within a one-mile radius of the site;
- background ground and surface water quality assessment; and,
- conceptual design of ground and surface water monitoring systems.

The Utah Geological Survey, The Utah Division of Water Resources, and the Utah Division of Water Rights have a collaborative effort in place to consolidate Utah ground-water information. The site is divided into five sections representing federal government, state government, county and local government, and other ground-water organizational resources. As part of the permit renewal process; a literature search was performed in the "Consolidated Utah Ground-Water Information List" to asses if new substantive geologic or hydrologic information was available for the Beaver

County Landfill area that would need to be addressed in the new permit application. Appendix G contains the results of the search that was conducted. Upon review of the literature; no new (1988 or more current) geologic or hydrologic studies were reported in the subject area that would impact original permit assumptions.

1.1.1 General Geologic Setting

The general geologic setting is described in Section 3.0 of the Waiver Application.

1.1.2 General Hydrologic Setting

The general hydrologic setting, climate, water budget, and analysis of ground water for the BCL are described in Section 4.0 of the Waiver Application.

1.2 SOIL CHARACTERISTICS

The soil characteristics assumptions concerning the BCL were generated by a preliminary review and evaluation of published information and a site specific field investigation. Section 5.0 of the Waiver Application presents the geologic mapping, geotechnical information and subsurface exploration of the BCL site.

1.3 WATER RIGHTS

A computer database search by the State of Utah Division of Water Rights did not disclose the presence of any water rights or existing or abandoned wells within a 2,000 foot radius of the landfill site. A copy of the correspondence from the Division of Water Rights is included as Appendix H of this permit application.

Two ephemeral drainages and an irrigation canal pass within one mile of the landfill. Ephemeral drainages, by definition, carry water only during heavy precipitation events and times of high run-off, and then only for short durations. In addition, the ephemeral drainage located just northwest of the landfill property is over 80 feet lower in elevation than the current disposal area. Dry Creek, an ephemeral drainage southeast of the landfill, is approximately 100 feet lower in elevation than the landfill. The irrigation canal, located southeast of the landfill, carries controlled, seasonal flow volumes at an elevation over 160 feet below the current disposal area. North Creek is also located to the southeast of the landfill, however; it is more than a mile from the landfill footprint. The creek is normally dry except for a few days in the spring during high water years, allowing runoff of excess precipitation. The disposal area at the Beaver County Landfill is currently operated as an area fill operation. Future disposal operations will involve area filling and vertical expansion over the existing waste mass. Any contact water resulting from precipitation falling on refuse will be confined in the active disposal area. Therefore, the potential for contaminating either the irrigation canal or the nearby ephemeral drainages is

negligible. As mentioned previously, the location of the landfill atop the Last Chance Bench indicates that off-site run-on is unlikely. The location of the landfill is unlikely to cause contamination to a lake, reservoir, or pond.

1.4 GROUND AND SURFACE WATER QUALITY

As described above, the only semi-permanent surface water in the vicinity of the landfill property is an irrigation canal located approximately one-fourth mile southeast of the landfill. The flow in the canal is controlled; water quality data was not available at the time of preparation of this report. Although there are no wells within one mile of the landfill, there are numerous wells scattered throughout the Beaver Valley. Sandberg (1966) presented chemistry data for domestic and irrigation wells in the Beaver, Escalante, Cedar City, and Parowan Valleys of southwestern Utah. Six wells were selected based on their proximity to the landfill. The closest well, identified as (C-29-7)19bcd-1 by Sandberg (1966), is located approximately two and one-half miles south-southwest of the landfill. Additional wells for which published data exist are located near the population centers of Beaver, Manderfield, and Greenville. While the information is not site-specific to the landfill property, it provides a reasonable estimation of the local ground water chemistry. The chemical data for each of these wells are summarized below, and are derived from published data by Sandberg (1966).

Beaver Basin Ground Water Chemistry*

Well Location	(C-28-7) 21daa-1	(C-29-7) 19bcd-1	(C-29-7) 21cad3/	(C-29-7) 21cda-1	(C-29-7) 21cdb4/	(C-29-8) 25cac-2
Sample Date	06-27-62	09-11-61	07-08-61	07-08-61	07-08-61	09-11-61
Temperature (EF)	53	56	56	54	57	68
Sp. Conductance (:mhos)	361	445	283	414	289	298
pH	7.4	7.5	7.3	7.4	7.4	7.9
HARDNESS (mg/L as CaCO ₃)	148	140	120	184	120	103
HARDNESS- NONCARBONATE (mg/L as CaCO ₃)	38	0	4	36	2	0
CALCIUM (mg/L as Ca)	48	44	38	59	36	32
MAGNESIUM (mg/L as Mg)	6.8	7.3	6.3	8.8	7.3	5.4
SODIUM (mg/L as Na)	--	--	10	14	12	--
POTASSIUM (mg/L as K)	--	--	2.5	2.5	2.9	--
Na + K (mg/L as Na)	16	49	--	--	--	29
BORON (mg/L as B)	--	--	0.02	0.04	0.03	--
SULFATE (mg/L as SO ₄)	25	60	16	27	15	48

CHLORIDE (mg/L as Cl)	30	22	6	28	7.5	7
FLOURIDE (mg/L as F)	0.5	--	0.3	0.4	0.4	--
SILICA (mg/L as SiO ₂)	31	50	31	31	32	69
DISSOLVED SOLIDS (mg/L)	227	325	194	266	190	254
NITRATE (mg/L)	3.7	2.8	7.5	1.9	6.9	0.7
SODIUM ADSORPTION RATIO (SAR)	0.6	1.8	0.4	0.4	0.5	1.2
PERCENT SODIUM	19	43	15	14	17	38
IRON (mg/L)	0.01	0.38	0.01	0	0.01	0.05

* from Sandberg (1966)

Miller, et. al. (1980), presented the results of geochemical analyses for 50 water samples collected from wells in the Beaver Basin. These data are summarized below:

**Summary of Chemical Analyses of 50 Water Samples
from the Beaver Basin, Utah***

Variable	Minimum	Maximum	Mean	Std. Deviation
Ca (mg/L)	9.6	120	43.8	22.2
Mg (mg/L)	1.7	22	8.88	4.58
Na (mg/L)	4.5	115	25.6	22.5
K (mg/L)	1.0	12	3.81	2.66
Li (mg/L)	<0.002	0.042	0.011	0.008
SiO ₂ (mg/L)	19	77	39.8	16.9
Alkalinity (mg/L)	27	360	172	83.9
SO ₄ (mg/L)	4.7	86	27.2	18.6
Cl (mg/L)	1.9	11	24.5	20.8
F (mg/L)	0.12	1.9	0.710	0.439
NO ₃ (mg/L)	<0.1	49	5.49	9.36
Fe (:g/L)	2.8	850	72.0	160
Mn (:g/L)	0.40	390	31.1	80.7
Al (:g/L)	9.0	1600	137	267
Zn (:g/L)	1.8	1000	55.3	158
Cu (:g/L)	0.70	63	5.87	9.90
Mo (:g/L)	0.50	89	4.25	12.6
As (:g/L)	1.0	22	5.02	4.96
U (:g/L)	<0.2	740	23.6	104
Se (mg/L)	0.40	5.6	1.84	1.11

V (mg/L)	<5.0	36	6.34	6.29
Sp. Conductance (:mhos/cm)	92	900	396	182
pH	6.84	9.00	7.62	0.471

* from Miller, et. al. (1980)

1.5 SITE WATER BALANCE

Among the possible problems created by waste storage in any landfill is the possible contamination of soil, surface water or groundwater by direct contact with the waste or by leached materials from water passing through the waste. Due to low annual precipitation and high annual evapotranspiration (evapotranspiration is the loss of water from soil by both evaporation and transpiration from plant growth) rates associated with the semi-arid climate in the Beaver Valley, the quantity of water infiltrating the Landfill is predicted to be small and therefore the leachate generation low.

Based on the Landfill design, the arid climatic conditions, in-situ soil conditions, geologic obstacles to groundwater flow, and the operational constraint of no liquid waste disposal, significant leachate generation from the cells of the Landfill and its impacts to underlying groundwater is considered to be minimal.

Previous site water balance studies utilizing the HELP software evaluated the sites potential to generate leachate. The results of the previous HELP analysis are included in Appendix E (Waiver Application) & Appendix F (Waiver Addendum).

1.6 GROUND AND SURFACE WATER MONITORING SYSTEMS

UAC requires a conceptual design of ground and surface water monitoring systems, including proposed installation methods and a vadose zone monitoring plan, where required. This permit application was originally submitted without provisions for a ground water, surface water, or vadose zone monitoring system. Supporting documentation for the original exemption is included as the Waiver Application (Appendix E) and the Waiver Addendum (Appendix F).

SECTION 2 - ENGINEERING REPORT

2.1 LOCATION STANDARDS

The following sections present the Solid Waste Facility Locations Standards and discuss the status of the Beaver County Landfill compliance with those requirements.

2.1.1 Land Use Compatibility

The UDEQ Division of Solid and Hazardous Waste's Solid Waste Permitting and Management Rules state that no Class I, Class II or a Class V landfill will be located within:

- One thousand feet of a national, state or county park, monument, or recreation area; designated wilderness or wilderness study area; or wild and scenic river area.
- Ecologically and scientifically significant natural areas, including wildlife management areas and habitat for listed or proposed endangered species, as designated pursuant to the Endangered Species Act of 1982.
- Farmland classified or evaluated as prime, unique, or of statewide importance by the U.S. Department of Agriculture, Soil Conservation Service, under the Prime Farmland Protection Act.
- One-quarter mile of existing permanent dwellings, residential areas, and other incompatible structures, such as, schools, churches, and historic structures or properties listed or eligible to be listed in the State or National Register of Historic Places.
- Proximity to an airport.
- Areas with respect to archeological sites.

2.1.1.1 Beaver County Landfill (BCL) Status

- The BCL is not located within 1,000 feet of a national, state, or county park, monument, or recreation area; designated wilderness or wilderness study area; or wild and scenic river area.
- Ecologically or scientifically significant natural areas have not been observed within or adjacent to the current site. This site is an active Landfill and has been used as such since 1994.
- There are not soils within the Landfill property boundaries that are classified prime soil types for farmland use according to the Soil Conservation Service (SCS) maps of Beaver County. Therefore, the site is not considered within a unique or important farmland zone.
- There are no schools, churches, historic structures, or properties eligible to be listed in the State or National Register of Historic Places currently located within one-quarter mile of the property line that encloses the area currently being operated as a Landfill.
- The Landfill is not located within 10,000 feet of a public-use airport runway used by turbojet aircraft. The closest airport is located more than five miles south of the landfill.
- No archaeologically significant discoveries have been made at the site, nor are any known to exist.

2.1.2 Geologic Hazards and Geotechnical Engineering

The Utah State Regulations indicate “No new facility or lateral expansion of an existing facility shall be located in a subsidence area, a dam failure flood area, above an underground mine, above a salt dome, above a salt bed, or on or adjacent to geologic features which could compromise the structural integrity of the facility”.

2.1.2.1 *Debris Flows and Alluvial Fan Flooding*

The site is located on the Last Chance Bench. The elevated nature of the bench is such that the potential for alluvial fan flooding or debris flows occurrence is considered to be extremely unlikely.

2.1.2.2 *Liquefaction*

Certain areas within the intermountain region also possess a potential for liquefaction during seismic events. Liquefaction is a phenomenon whereby loose, saturated, granular soil deposits lose a significant portion of their shear strength due to excess pore water pressure buildup resulting from dynamic loading, such as that caused by an earthquake. Among other effects, liquefaction can result in densification of such deposits causing settlements of overlying layers after an earthquake as excess pore water pressures are dissipated. The primary factors affecting liquefaction potential of a soil deposit are: (1) level and duration of seismic ground motions; (2) soil type and consistency; and (3) depth to groundwater.

Because the facility is founded largely on dry sands, gravels and silts the site has a very low potential for liquefaction and it should not be considered a concern for this site.

2.1.2.3 *Seismicity and Faulting*

Section 3 of the Waiver Application (Appendix E), details the general geologic setting including faulting.

2.1.2.4 *Seismic Impact Zone*

The EPA and the DSHW define a seismic impact zone as any location with a 10% or greater probability that the maximum horizontal acceleration (MHA) in lithified earth material, expressed as a percentage of the earth's gravitational pull, will exceed 0.10g in 250 years.

The MHA in lithified earth material is defined in 40 CFR part 258.14 (EPA 1995) as the “maximum expected horizontal acceleration depicted on a seismic hazard map with a 90% or greater probability that the acceleration will not be exceeded in 250 years, or the maximum expected horizontal acceleration based on site specific seismic risk assessment.” Seismic hazard maps depicting probabilistic ground motions and spectral response have been developed for the United States as part of NEHRP/NSHMP (Frankel et al, 1996; FEMA, 1997). These maps serve as the basis for the International Building Code (IBC). Using NEHRP-based interactive software developed by

Leyendecker et al. (2000), probabilistic spectral accelerations corresponding to the MCE (maximum considered earthquake) seismic hazard levels were identified for the site, assuming rock-like conditions.

The MCE is often associated with a 2PE50 hazard level (equivalent to the 90% or greater probability that the acceleration will not be exceeded in 250 years). These spectral accelerations are consistent with 5% damping. To account for site effects, site coefficients which vary with the magnitude of spectral acceleration should be used to modify the bedrock-based spectral acceleration values.

2.1.2.5 Seismic Impact Zone Analysis

DSHW rules require that any new landfill or lateral expansion to an existing facility located in a seismic impact zone to have all containment structures, including liners, and surface water control systems designed to resist the maximum horizontal acceleration in lithified earth material for the site. The final configuration of the BCL has been analyzed under static and pseudo-static conditions to determine whether the facility will be adversely impacted from an earthquake event. The findings of the analysis, presented in Appendix I (Slope Stability), indicates that the minimum factor of safety (F.S.) under static conditions is 2.4 and the minimum F.S. under pseudo-static conditions is 1.4, both well above the critical F.S. of 1.0. Based on this analysis, the landfill disposal cells, as well as the ancillary facilities such as the drainage and water control structures, can maintain their integrity during the expected maximum probable earthquake event.

2.1.2.6 Unstable Areas

An unstable area means “a location that is susceptible to natural or human induced events or forces capable of impairing the integrity of some or all of the landfill structural components responsible for preventing releases from a facility”. Unstable areas include poor foundation conditions or karst terrain resulting in excessive differential settlement, or areas susceptible to mass movement liquefaction.

A field investigation was undertaken in the development of the Waiver Application (Appendix E) and included a subsurface drilling and sampling program. Information obtained during the investigation indicates that the soils beneath the landfill property are characterized by sandy gravel, sandy silt, and silty clay. No expansive soils are known to exist anywhere on the property. Subsidence has not been observed in old fill areas, either by soil settlement due to the overlying waste load, or due to settlement within the waste mass itself.

A study by Mulvey (1992), entitled *Engineering Geologic Problems Caused by Soil and Rock in Southwestern Utah*, presented a generalized map of the distribution of problem soil and rock in southwestern Utah which defines six types of problem soil or rock including expansive soil or rock; collapsible soil; gypsiferous soil or rock; limestone (karst); soils susceptible to piping; and, areas which contain active dunes. The study did not indicate the presence of any of these problem soil and rock types in the vicinity of the BCL. In addition, there are no excessively steep slopes or bedrock outcrops in the vicinity of the landfill. The nearest lithologic unit which has been characterized as an unstable slope having the potential for mass-wasting lies approximately five miles west of the site in Beaver Canyon (Harty, 1992). In addition, a map of landslides in southwestern Utah by Harty (1992) shows the nearest landslide to be in Beaver Canyon. Based on this information and the topographic location of the landfill on top of the Last Chance Bench, the operation of the BCL is not likely to be affected by problems of settlement or unstable slopes or foundation material.

2.1.3 Surface Water Requirements

UDEQ has adopted Subtitle D location restrictions for floodplains, wetlands and watersheds. The Landfill site does not currently fall within a delineated 100-year flood zone. There are no known or designated wetlands within the limits of the Landfill boundary. The Landfill is not located in a watershed for a public water system or a location that could cause contamination of a lake, reservoir, or pond. There are no known endangered or threatened species within the Landfill area.

2.1.3.1 Floodplain

There has been very little, if any, floodplain mapping performed outside of incorporated city boundaries in southern Utah. Floodplain mapping for the Beaver area does not extend to the area surrounding the Landfill and as a result the site is not mapped in a potential floodplain. Based upon the location of the Landfill on the Last Chance Bench; the likelihood of being in a floodplain is extremely unlikely.

2.1.3.2 Watershed Management Areas

DSHW rules prohibits solid waste facilities from being located on any public land that is being used by a public water system for watershed control for municipal drinking water. The Department of Environmental Quality Division of Drinking Water has verbally indicated that Beaver County does not utilize any surface watersheds for use as a drinking water source and that all utilities in the County use groundwater extraction wells as the source of drinking water.

2.1.4 Groundwater Requirements

UDEQ location restrictions with respect to groundwater protection include the following:

- No new facility shall be located at a site where the bottom of the lowest liner is less than 5 feet above historical high levels of groundwater in the uppermost aquifer.
- No new facility shall be located over a sole source aquifer.
- No new facility shall be located over groundwater classified as IB (an irreplaceable aquifer).
- A new facility located above any aquifer containing groundwater which has total dissolved solids (TDSs) content below 1,000 milligrams per liter (mg/l) and does not exceed applicable groundwater quality standards for any contaminant is permitted only where the depth to groundwater is greater than 100 feet. For a TDS content between 1,000 and 3,000 mg/l, the separation must be 50 feet or greater. These separation distance requirements are waived if the landfill is constructed with a composite liner.
- No new facility shall be located in designated drinking water source protection areas or, if no such protection area is designated, within a distance to existing drinking water wells or springs for public water supplies of 250-day groundwater travel time.

2.1.4.1 Beaver County Landfill Status

The lowest point of the bottom of the Landfill is at least 100 feet above the highest anticipated groundwater elevation as detailed in Section 4 (Appendix E). Groundwater beneath the Landfill area is not classified as a sole source or Class IB (irreplaceable aquifer). A groundwater transport study was conducted as part of the previous permit application Sections 7 and 8 (Appendix E). Based on this information the landfill does meet the requirements of the groundwater protection location restrictions.

2.2 PHASED DESIGN - PROPOSED LANDFILL DEVELOPEMENT

As described in Section 3.1 of Part II; each of the Landfills will be developed in Phases. The following sections discuss the development of future Phases and the incremental filling of each of the Landfills.

2.2.1 Design and Operation

The BCL is operated as a mass fill landfill. For the sake of volume analysis and construction staging; the development of the landfill is broken into Phases. The drawings (Appendix A) detail the extent of each Phase and the contours of the final cover.

2.2.2 Liner Requirements

The BCL is designed without a synthetic liner. Previous studies and site investigations by Vector Engineering have demonstrated that a synthetic liner was not required. Appendix E and F contain the initial liner exemption data.

2.2.3 Estimated Life

The projected waste stream for the Landfill will come from Beaver County. Estimated daily waste tons being delivered to the BCL operations is approximately 23 tons per day based on recent records. Only limited distinction is made in the records between residential and commercial waste disposal. The anticipated future air space consumption has been evaluated based upon a 4.4% waste stream increase rather than the originally anticipated escalation of 2.38%.

The Landfill life projections are only estimates; the actual life of the Landfill will depend on several variables including the actual rate of waste being delivered, densities, settlement and the potential use of alternate daily cover materials. Appendix J – Landfill Life contains the detailed evaluation of the consumption of airspace.

2.2.3.1 Phase 1

Beaver County has been accepting municipal solid waste at the current site since 1996. Consumption of airspace between 1996 and the preparation of this application have been reflected in the Landfill life analysis with Phase 1 lasting until approximately 2012. The locations of the BCL Phases are illustrated on Drawing 6 (Appendix A).

2.2.3.2 Phase 2

Phase 2 will begin operation as Phase 1 is complete. The airspace available in Phase 2 will provide landfilling capacity for approximately 8 years with capacity being reached in approximately 2020.

2.2.3.3 Phase 3

Phase 3 has landfill capacity for approximately 5 years with capacity being reached in approximately 2026.

2.3 DAILY, INTERMEDIATE AND FINAL COVER

2.3.1 Daily and Intermediate Soil Cover

Daily cover soils must meet the 6-inch State requirements for protection against odors, litter and vectors at the MSW working face. The daily 6-inch thick cover will typically be obtained from the excavation of the surrounding slopes and from previously excavated materials.

Intermediate cover soil requirements are governed by R315-303-4. The outside face of the daily modules and waste areas that are expected to remain inactive for more than 30 days will be protected with an additional 12 inch intermediate cover. The borrow area for intermediate cover soils is the same as for daily cover soils.

Before the start of waste placement each day, cover soils on top of the previous lift will be stripped back and stockpiled for reuse as soil cover at the end of the day or as needed. These recycled cover soils will be used first; the remainder of daily cover soils will be provided from cell excavation or stockpiled soils.

All C&D wastes deposited at the BCL will receive soil cover no less than every 30 days.

2.3.2 Alternate Daily Cover

BCL utilizes a 1.5 mil plastic membrane as an alternate daily cover. Soil is used as daily cover no less frequently than weekly to provide both trafficable surfaces and to isolate potential fires should they develop.

2.3.3 Final Cover

The final cover at the BCL will be constructed as described in Section 3.2.

2.4 MONITORING SYSTEM

2.4.1 Ground Water Monitoring System

The BCL was not required to install ground water monitoring wells.

2.4.2 Leachate Monitoring

The BCL was not required to install a synthetic liner system nor install a leachate collection system.

2.4.3 Landfill Gas

The decomposition of solid waste produces methane, a potentially flammable gas. The accumulation of methane in site structures can result in fire and explosions that can injure employees and property, users of the Landfill, and occupants of nearby structures. In accordance with Subtitle D and Utah rules, BCL will conduct surface and facility structure gas monitoring at least quarterly for methane detection. The concentration of methane gas generated by the Landfill must not exceed 25% of the lower explosive limit (LEL) in the facility structures (excluding gas control or recovery system components). The concentration of methane gas generated by the Landfill must not exceed the LEL at the facility boundary. As outlined in EPA Subtitle D, Subpart C and the State of Utah Regulations, BCL will take all necessary steps to protect human health and will immediately notify UDEQ of methane levels detected above required limits and actions taken, if any. Within 10 days of an incident, BCL will place documentation of the methane gas levels detected and a description of the interim steps taken to protect human health in the operating record. Within 60 days of detection, BCL personnel will implement a remediation plan for the methane gas releases, place a copy of the plan in the operating record, and notify UDEQ that the plan has been

implemented. The remediation plan will describe the nature and extent of the problem and describe the proposed remedy.

2.5 DESIGN AND LOCATION OF RUN-ON/RUN-OFF CONTROL SYSTEMS

The main objectives of surface water management for the landfill operation are to provide adequate landfill drainage, to prevent off site run-on, preventing unnecessary surface water infiltration and subsequent leachate production, to contain surface run-off from open areas on-site; and to prevent erosion. Federal regulations require: 1) A run-on control system to prevent flow onto the active portion of the landfill during the peak discharge from a 24-hour, 25-year storm; and 2) Run-off control system from the active portion of the landfill to collect and to control at least the water volume resulting from a 24-hour, 25-year storm. Appendix K – Drainage System Design contains the details and assumptions utilized to calculate run-on and run-off volumes.

SECTION 3 – CLOSURE PLAN

3.1 CLOSURE STRATEGY/SCHEDULE

This section describes the final cover construction, site capacity, schedule of closure implementation, estimated costs for closure, and final inspection procedures for the closure Stages at the BCL.

The Executive Secretary will be notified in writing at least 60 days prior to the anticipated last receipt of waste in accordance with R315-302-3(4)(a). Implementation of the final closure Stage will begin within 30 days after last receipt of waste. Final closure of the entire Landfill will be completed within 180 days of implementation of closure activities, unless an extension has been granted by the Executive Secretary.

Closure will occur incrementally. Each Landfill Phase will be closed once it has been filled to design capacity. The following table summarizes by Landfill Phases the approximate Landfill Phase capacity and projected dates of service:

Landfill Phase	Phase Capacity (cubic yards)	Projected Date of Completion
Phase 1	228,200	2012
Phase 2	182,000	2020
Phase 3	167,500	2026
MSW TOTALS	577,800	

To estimate the landfill life and project the timing of constructed projects; engineering assumptions about the extent of each Phase were made to be able to calculate volumes. The length of time that each Phase will be in service will depend upon the day to day operation of the Landfill and will vary from the specific dates of closure presented above. It may be necessary, due to site access requirements, to partially fill future Phases to allow for final waste placement within a particular Phase.

The closure of the BCL will be completed in accordance with this plan. Closure activities will be performed in such a manner as to accomplish the following goals:

- minimize the need for further maintenance;
- minimize or eliminate threats to human health and the environment from post-closure escape of solid waste constituents, leachate, landfill gases, contaminated run-off or waste decomposition products to the ground, ground water, surface water, or the atmosphere; and,
- adequately prepare the facility for the post-closure period.

3.2 FINAL COVER DESIGN AND INSTALLATION

3.2.1 Final Cover – General

The final cover at the BCL will be completed in three stages or phases. Final cover construction will be completed following completion of filling in each of the three disposal areas defined on Drawing 6 (Appendix A). As a result, the largest area of the landfill which will require closure construction at any given time during the life of the landfill will be the area encompassed by the Phase 1 disposal area, or approximately 7.3 acres. All equipment which will not be used on-site during the post-closure period will be removed. Structures at the site which remain after the final receipt of waste, and which will not be an integral part of post-closure site maintenance, will be dismantled and removed from the site. Any soil contamination remaining after the final receipt of waste will be removed, treated, or disposed of according to applicable regulations. Following the final receipt of waste, any remaining stockpiles of recyclable or other stored materials will be removed from the site.

Rough contouring will be performed throughout the life of the site during daily operations. Following the general site cleanup described above, final contouring will be performed using native soils to establish a suitable foundation layer for final cover construction. The site will be surveyed to establish base elevations for closure cap construction. After final grading of the foundation layer (12-inch in depth), the installation of the first layer of the final cover will begin.

A QA/QC and closure documentation program will be submitted to the DSHW for review and approval prior to any construction activities. Final cover testing will be performed as part of a construction Quality Assurance / Quality Control (QA/QC) Plan.

A GCL will be installed rather than the 18-inch infiltration barrier layer (referenced in the original permit). Following the installation of the GCL, a minimum of 24-inches of native soil will be placed over the GCL. This layer (erosion control layer) will be comprised of an approximate 50-50 mix of topsoil and coarse-grained gravelly sands and sandy gravels capable of sustaining native plant growth and preventing excessive amounts of erosion.

Final cover drawings will be modified (as part of the development of the QA/QC Plan) to reflect the use of the GCL in the final cover rather than the originally planned cover system. Drawings in Appendix A still reflect the old cover system.

Interior and exterior perimeter drainages or drainage diversions will be constructed as illustrated on Drawing 5 (Appendix A). The drainages will assist in maintaining the integrity of the final cover and preventing a washout of waste due to uncontrolled run-off during precipitation events.

3.2.2 Final Cover – Design

As described above; the final cover will consist of a 12-inch foundation layer, a GCL overlain by a 24-inch erosion control layer. The 24-inch erosion control layer will consist of on-site soils capable of sustaining native plant growth. The final cover will be graded so as to prevent ponding and minimize infiltration of run-off waters.

The closure design is illustrated on Drawing 5 (Appendix A). As described above, the largest area to be covered at any time will be approximately 7.3 acres and will include the Phase 1 disposal area. Due to the relatively flat topography surrounding the facility, the final topography of the closed landfill was designed to blend with the local topography while maintaining a minimum grade of three percent on all slopes. As illustrated on Drawing 5 (Appendix A), the final cover topography consists of two adjacent mounds. The final design has been divided into three disposal areas, as depicted on Drawing 6 (Appendix A). Final cover construction will occur over the in-place waste mass when a given disposal phase reaches final design grades, or three times during the life of the facility. Each phase of closure construction will be certified by a professional engineer registered in the State of Utah.

The top slopes will be graded at a minimum of three percent into a perimeter drainage channel. Storm flows will be routed over the sideslopes and into the perimeter drainage channel. All sideslopes are graded to a maximum slope of three to one, horizontal to vertical (3:1), and are configured to minimize drainage lengths while promoting surface run-off to perimeter drainage channels.

Drainage channels were sized to accommodate the flow from a 25-year, 24-hour storm event. A detailed discussion of site hydrology and hydraulics is included in the drainage report presented in Appendix K. A drainage channel will be constructed around the interior perimeter of the closed area, inside the perimeter access road. Four culverts will be installed in strategic locations to direct run-off from the closed surface of the landfill under site access roads and away from the site as illustrated in Drawing 5 (Appendix A). All culverts and sideslope downdrains are sized as 18-inch

corrugated metal pipe. Exterior perimeter drainage channels will not be required because of the location of the landfill atop the Last Chance Bench. Off-site run-on is not anticipated.

3.3 SEED, FERTILIZER AND MULCH

The top 6-inches of the erosion control layer will be utilized for vegetation. The vegetative layer of the cap will be seeded with a mixture of grasses suitable for fast growth in the region, then fertilized and mulched.

Early establishment of vegetation on the landfill's final slope surface will impede soil erosion and promote evapotranspiration. BCL staff will periodically evaluate vegetative growth, vigor, and color so that the integrity of the final cover system is maintained. If stress signs on vegetation caused by landfill gas and leachate seeps are noted, the problem will be corrected. Corrective procedures will be conducted based on current design recommendations and will be built consistent with construction specifications. BCL staff or a licensed landscape contractor will make repairs, as necessary.

3.4 LANDSCAPING

The Landfill facility, including all surrounding grounds, will be maintained in conjunction with any scheduled maintenance activities (i.e., road improvements, etc.). The landscape of the Landfill will be designed to be both functional and low maintenance. Due to the location of the Landfill; the required landscaping will be minimal in nature and be comprised of drought tolerant native grasses.

3.5 FINAL COVER CONTOURS

The Landfill's final grades will be inspected and maintained in order to ensure its integrity and conformity with the conceptual final cover plans.

Any areas where water has collected (ponded) will be regraded. Erosion damage resulting from extremely heavy rainfall will be repaired. BCL staff will inspect the final grading no less than quarterly.

3.6 QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)

For construction of the final Landfill cover, drawings, specifications and QA/QC procedures will be developed by a Utah licensed Professional Engineer and submitted to the State of Utah DSHW for review and approval prior to construction of each closure Phase.

3.7 CLOSURE COST ESTIMATES

The current cost estimates for the closure of the BCL operation is provided in Appendix L –

Closure/Post Closure Costs.

3.8 CERTIFICATION OF CLOSURE AND RECORD KEEPING

A Utah licensed Professional Engineer will be retained to observe the closure of each of the final cover Phases. The registered engineer will be employed by BCL, or will be a BCL-hired consultant and will certify the Landfill was closed according to the closure plan. Any amendment or deviation to the closure plan will be approved by the Executive Secretary and any associated permit modifications will be made. Final closure work and documentation will be observed and reviewed by DSHW personnel as necessary.

As part of the certification process, the engineer shall also provide closure as-built drawings to the Executive Secretary within 90 days following completion of closure activities.

Additionally, the final plats and the amount and location of waste will be recorded on the site title. The owner will file the notarized plat with the County Recorder within 60 days following certification of closure.